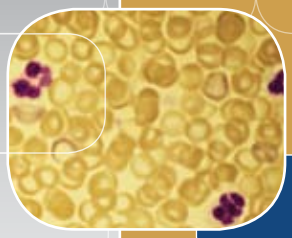


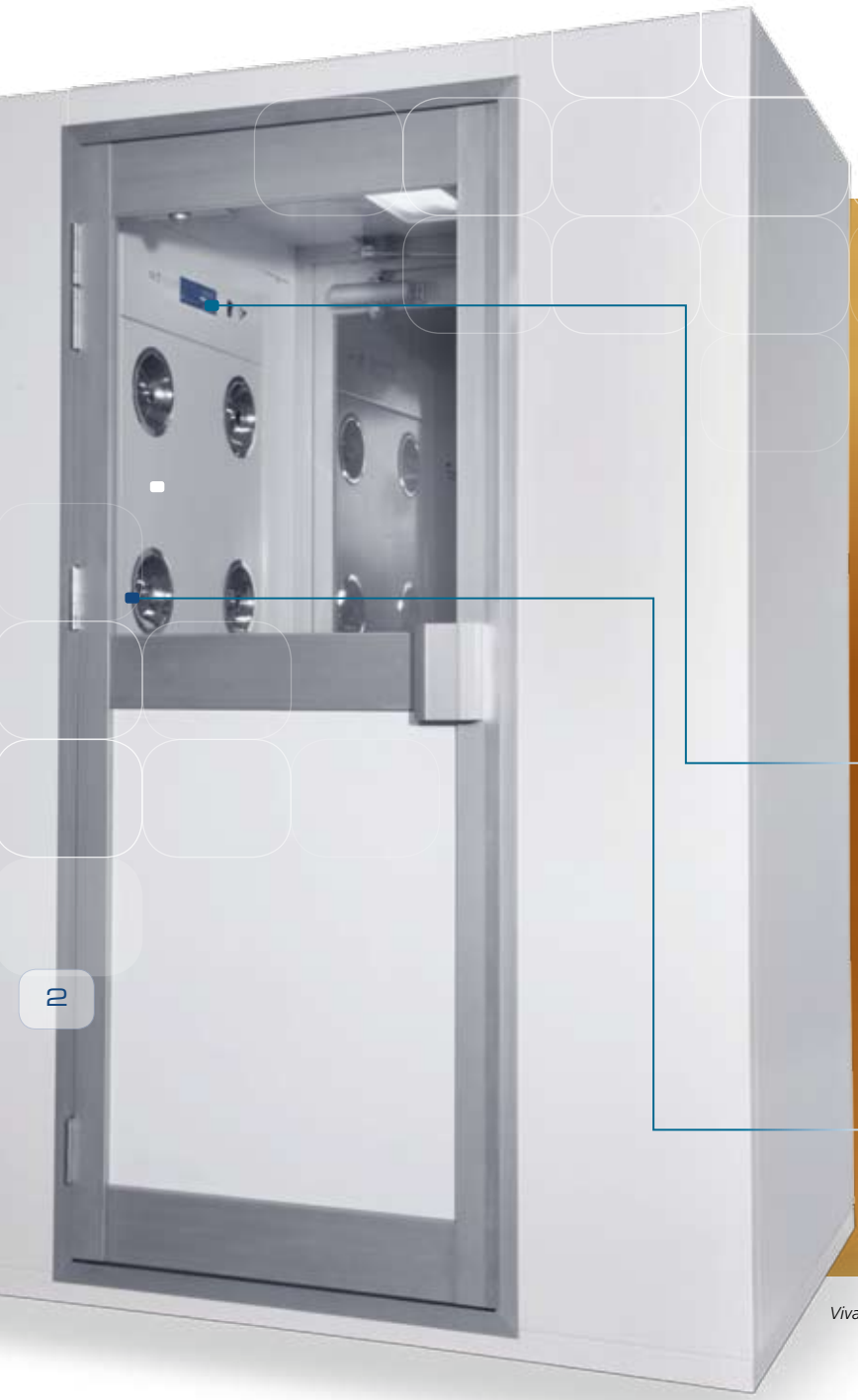
VIVA®

Viva Air Shower,
Model - EAS-1B__.

Air Showers

The Safety Solution for Animal Research Laboratories

ESCO
WORLD CLASS. WORLDWIDE.



Main Features

- High velocity shower jets in excess of 20 m/s ensure efficient scrubbing action to remove particulate matter.
- Operating modes can be programmed in the field.
- Microprocessor controller supervises all functions.
- Mini-pleated HEPA filtration achieves > 99.99% typical efficiency at 0.3 micron particles.
- A disposable pre-filter with 85% arrestance extends the life of the main filter.
- An emergency stop button is mounted on both sides of the shower.
- Indicator lights mounted on both sides of the air shower exterior regulate traffic flow in and out of the cleanroom.
- Permanently lubricated direct drive centrifugal blowers are used in conjunction with stainless steel air nozzles.

*Viva Air Shower Model EAS-1B_*

Body Box Testing

Esco is the only company in the industry to validate the efficacy of our air showers using the body box test.

1. *New cleanroom garments without laundry processing, which have residual particulate contamination from manufacturing in a non-cleanroom environment, are used.*
2. *An operator dons the garment, and enters a specially sealed enclosure (the body box).*
3. *The operator performs a series of standardized physical movements in order induce the generation of particulates.*
4. *A particle counter connected to the base of the body box measures particle count levels.*
5. *The operator proceeds into the air shower, which is connected to the body box, for a standard 12 second cycle.*
6. *The operator returns to the body box and performs the same series of standardized physical movements, particle count levels are measured, and compared against the original baseline.*

Touchpad data entry buttons permit control settings and access to diagnostics, default settings and hierarchical menus.

LEDs indicate door interlock and shower sequence

Backlit LCD display reports air shower cycle progress and operational status.

Air shower sequence may be programmed through the touch control pad. Any of the 3 standard Esco air shower sequences may be chosen. Shower duration is also easily adjusted via the control keypad using the intuitive menu interface.

Sentinel Microprocessor Control System, Programmable

Introduction

Air Showers are self contained chambers installed at entrances to cleanrooms and other controlled environments. They minimize particulate matter entering or exiting the clean space. Personnel and materials entering or exiting the controlled environment are "scrubbed" by high velocity HEPA-filtered air jets with velocities of 20-22m/s (4000-4300fpm). Contaminated air is then drawn through the base within the unit, filtered and recirculated.

Esco is a leader in air showers for demanding applications in the micro-electronics, semiconductors, pharmaceutical, spray-painting, lab animal research and food markets. Esco filed its first Air Shower patent in the 1980's and since then has installed thousands of units in diverse markets worldwide. The present Esco Air Shower is a third-generation product and features a field-programmable microprocessor control that offers the maximum application flexibility of any unit on the market.

Pharmaceutical and Lab Animal Research Applications: air showers keep pharmaceutical production and lab animal breeding areas clean and also minimize egress of hazardous substances and allergens from the controlled environment.

Air Shower Operating Sequences

Unlike conventional air showers which are delivered with a fixed operating sequence, the Esco Air Shower's operating sequence may be selected from three pre-programmed sequences:

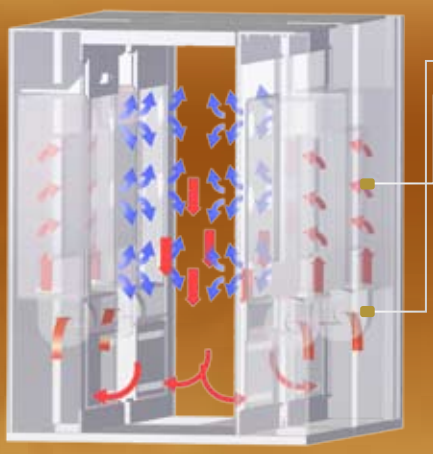
One-Way: Personnel may enter the controlled environment but not exit through the air shower. At the idle state, the clean side door is locked while the grey side is unlocked. This mode of operation is useful for controlling traffic patterns into and out of the controlled environment.

Two-Way One-Way: Personnel may enter or exit the controlled environment through the air shower. When entering the controlled environment the shower is activated. When exiting the shower is disabled to reduce throughput time. The air shower program is able to detect if the person is entering or exiting the controlled environment via door sensors and a time-sequenced control.

Two-Way: Personnel may enter or exit the controlled environment through the air shower. In both directions the air shower is activated. This mode of operation is useful in pharmaceutical and lab animal research applications to prevent the egress of hazardous substances and allergens from the controlled environment.

Operating Features

- Indicator lamps indicate if doors are locked or unlocked, thereby regulating the flow of personnel in and out of the air shower.
- Mode of operation, pre-purge time, shower time may be programmed.
- The pre-purge function enhances clean-room integrity by cleaning the interior of the air shower when it is powered on. Pre-purge time is adjustable from 0 to 3 minutes.
- Cleanroom / grey side settings may be reversed via the microprocessor control in the field, eliminating the need to re-orient the unit physically.
- The reset default function allows users to reset program settings to default values.
- The auto reset feature unlocks doors in case personnel open the air shower door but do not actually enter, thus preventing accidental lock-outs.
- In case of a power failure, all doors are unlocked automatically, and controller settings saved.
- The microprocessor control detects improper operation and displays corresponding error messages should the integrity of the cleanroom be violated.



Air Shower Filtration System

Blower

HEPA Filter

ULPA-filtered air

Unfiltered / potentially contaminated air

- Air is forced by the blower(s) through HEPA filter(s) which are 99.99% efficient against particles of 0.3 microns.
- Filtered air is ejected through nozzles at high velocities into the chamber. These turbulent air streams disperse particulate matter on all surfaces.
- Dispersed particulate matter migrate with the air stream towards the lower areas in the air shower chamber. Air enters the blower supply plenum through pre-filter(s) installed at the base of the chamber.
- The air is continuously filtered and recirculated. The air shower is a self-contained device and does not exchange air with the environment it is placed in.

- LEDs in the chamber indicate interlock and shower sequence.
- Microprocessor watchdog function detects any system failure and automatically resets to a safe state.
- A maintenance function may be selected to operate the fan continuously for service checks including air velocity measurements.
- An administrator PIN can be set to restrict access to air shower settings.
- A circuit breaker in the chamber and emergency buttons mounted on both external faces of the shower unlocks all doors instantly.

Consult your Esco Operating Manual or contact your Sales Representative for information on user-preference programming capabilities built into the Sentinel microprocessor platform.

Air Shower Construction

Robust construction qualify the air shower for the most demanding applications. The air shower is fully assembled and ready to install and operate when shipped.

- Esco Air Showers use German made ebm-papst® permanently lubricated, centrifugal motor/blowers with external rotor designs. Selected for energy efficiency, compact design, and flat profile, the completely integrated blower assembly optimizes motor cooling, with unified rotating parts and overall component balance for smooth, quiet, vibration-free operation. Weight is equally distributed to all bearings to extend bearing life.
- An array of stainless steel nozzles direct high-velocity jets within the chamber.
- HEPA filter(s) provide 99.99% typical efficiency for particle sizes of 0.1 to 0.3 microns. Esco Air Shower filters meet the IEST-RP-CC001.3 recommended practice for HEPA performance (USA), and EN 1822 for H13 performance (EU).
- A disposable pre-filter with 85% arrestance extends the life of the main filter.
- The air shower is constructed of electro-galvanised steel sheets with an abrasion-resistant oven-baked powder coated finish.
- The integral chamber floor is constructed of reinforced stainless steel.
- Industrial-grade electromagnetic locks are reliable and have no moving parts to fail.
- Heavy-duty, durable aluminium framed door assemblies are constructed with glass windows permitting visibility.
- Diffusers ensure even and uniform lighting throughout the chamber.
- Resettable circuit breaker for both the blower circuit and electronics boards for increased electrical safety.
- All electrical components are UL listed / recognised.

Factory Testing

- Each air shower is individually factory tested for safety and performance in accordance with international standards. Each unit is shipped with a documentation outlining the tests undertaken and the units individual results for each unit.

  Factory tests include:

  - Functional tests and visual inspection
  - Electrical safety tests
  - Air velocity testing

Warranty

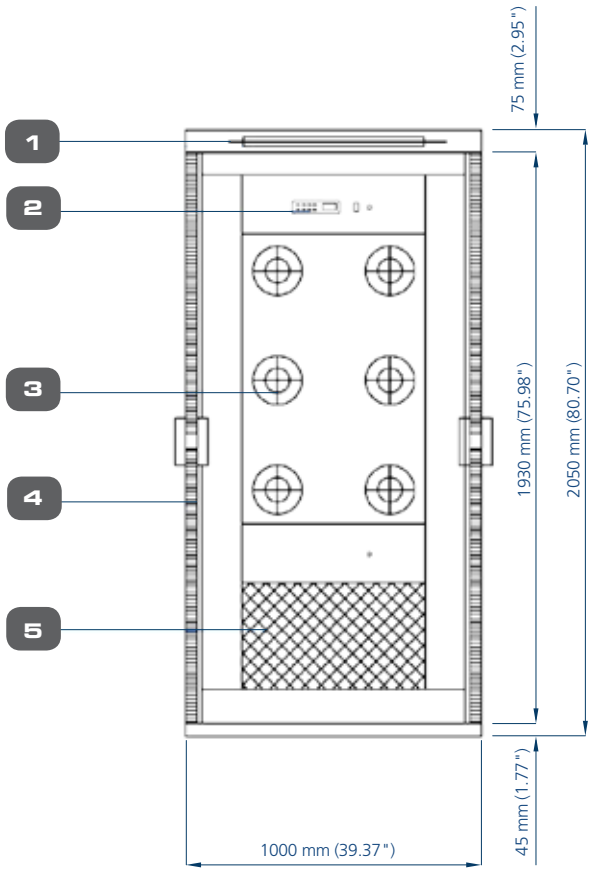
The Viva Air Shower is warranted for 1 year excluding consumable parts and accessories.

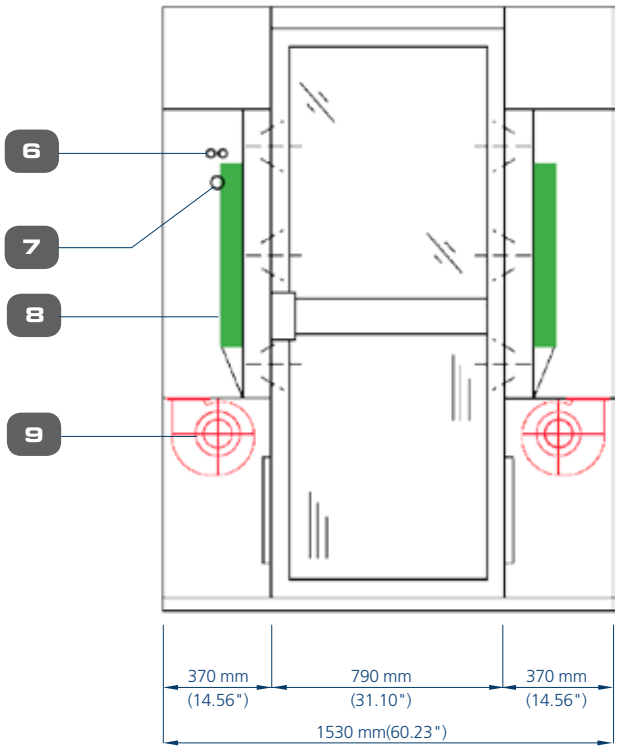
- Each air shower is shipped with a comprehensive User's Manual complete with a report documenting all test procedures.
- Additional IQ/OQ documentation is available upon request.
- Contact your local Sales Representative for specific warranty details or documentation requests

FAST TRACK

FastTrack models are available for shipment within 1 week from order placement, from Esco Singapore, to destinations around the world. The following models are available under this program: EAS-1A1 & EAS-1B1.

Model EAS-1B_, Viva Air Shower Technical Specifications



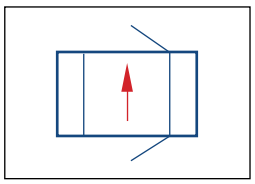


1. *Fluorescent lamp*
2. *Esco microprocessor system*
3. *Nozzles*
4. *Door*
5. *Pre-filter*
6. *Indicator light*
7. *Emergency switch*
8. *HEPA filter*
9. *Blower*

Model EAS B-Series, Door Direction

(Factory Configured. Choose One When Ordering.)

1.



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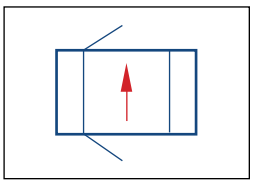

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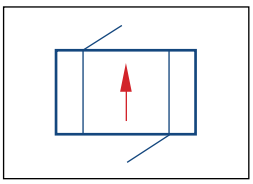

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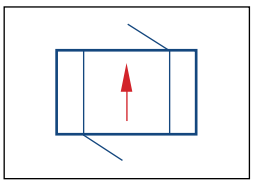


General Specifications, Viva Air Shower, Model EAS B-Series		
Model		EAS-1B_
External Dimensions (W x D x H)		1530 x 1000 x 2050 mm (60.2" x 39.4" x 80.7")
Internal Work Area, Dimensions (W x D x H)		790 x 920 x 1930 mm (31.1" x 36.2" x 76.0")
Air Change		743/ Hr
Initial Airflow Velocity		20-22 m/s (3,937-4,330 fpm)
Number of Nozzles		12
Air Shower Duration		Factory set at 12 seconds (adjustable)
Persons Per Cycle		1
Personnel Flow (Persons / Min.)		4
		Above figures based on: Total Cycle Time of 16 seconds (12 seconds of Air Shower + 4 seconds for buffer time / personnel entrance and exit)
Filtration Efficiency		Main Filter: >99.99% at 0.3 µm Pre-Filter: Arrestance 85%, efficiency 20%
Filtration Elements		Main Filter: HEPA filter Pre-Filter: Disposable and non-washable polyester fibers
Fluorescent Lamp		17 W x 2
Air Shower Construction		1.5 mm/ 0.06"/18 electro-galvanised steel / White oven-baked epoxy powder-coated finish
Max. Power Consumption, Current, BTU/Hr	During Operation	500 W, 2.3 A, 1020 BTU/ Hr
	During Standby	162 W, 0.7 A, 330 BTU/ Hr
Electrical	220-240V, AC, 50Hz, 1 Ø	EAS-1B1
	110-120V, AC, 60Hz, 1 Ø	EAS-1B2
	220-240V, AC, 60Hz, 1 Ø	EAS-1B3
Gross Weight		400 kg (882 lbs)
Net Weight		330 kg (728 lbs)
Maximum Shipping Dimensions, W x D x H		1420 x 1220 x 2210 mm (55.9" x 48.0" x 87.0")

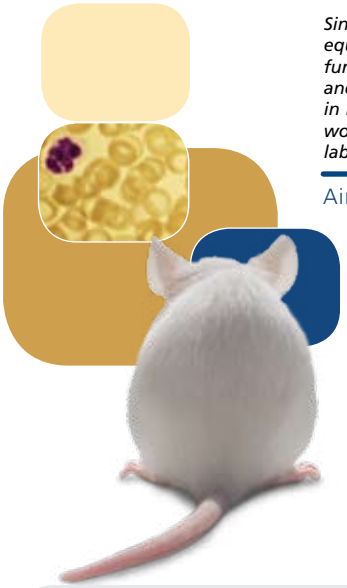
Note: EAS B-series Air Shower models are suitable for configuration as a tunnel system.

Standards Compliance	Filtration	Electrical Safety
	EN-1822 (H13), Europe IEST-RP-CC001.3, USA IEST-RP-CC007, USA IEST-RP-CC034.1, USA	UL- 61010-1, USA CAN/CSA-22.2, No.61010-1 EN-61010-1, Europe IEC-61010-1, Worldwide

Biological Safety Products
Cleanroom Products
Containment / Pharma Products
Ductless Fume Hoods / Carbon Filtration
General Purpose Scientific Equipment
Industrial Lab Equipment
In-Vitro Fertilization Products
PCR Products
Pharmacy Products
Lab Animal Research Products
Lab Thermostatics Products
Lab Ventilation / Chemical Fume Products / Lab Furniture
Powder Handling Products

Since 1978, Esco has emerged as a leader in the development of controlled environment, laboratory and cleanroom equipment solutions. Products sold in more than 100 countries include biological safety cabinets, fume hoods, ductless fume hoods, laminar flow clean benches, animal containment workstations, cytotoxic cabinets, hospital pharmacy isolators, and PCR cabinets and instrumentation. With the most extensive product line in the industry, Esco has passed more tests, in more languages, for more certifications, throughout more countries than any biosafety cabinet manufacturer in the world. Esco remains dedicated to delivering innovative solutions for the clinical, life science, research and industrial laboratory community. www.escoglobal.com.

Air Showers • Bedding Disposal Stations • Biological Safety Cabinets • Cage Changing Stations



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